

What is claimed is:

1. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, for the manufacture of a medicament for selective modulation of osteoblasts.
2. Use according to claim 1 wherein the selective modulation comprises a stimulation of the cellular activities of the osteoblasts.
3. Use according to claim 1 or claim 2 wherein the selective modulation comprises influencing the  $\text{Ca}^{2+}$ -homeostasis of the osteoblasts.
4. Use according to any of the foregoing claims wherein the selective modulation comprises a transient increase of the  $\text{Ca}^{2+}$ -levels in the osteoblasts.
5. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, for the manufacture of a medicament for the maintenance of a healthy bone structure.
6. Use according to claim 5 wherein the medicament is applied in healthy patients.
7. Use according to claim 5 or claim 6 wherein the medicament is applied in patients without osteopathies.
8. Use according to any of claims 5 to 7 wherein the medicament is applied in human beings or vertebrate animals.

9. Use according to any of claims 5 to 8 wherein the medicament is applied in human beings at or above the age of 40 years.

10. Use according to any of claims 5 to 8 wherein the medicament is applied in children.

11. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, for the manufacture of a medicament for the prevention of osteopathies in healthy patients.

12. Use according to claim 11 wherein the osteopathy is selected from the group comprising osteoporosis, Paget's disease, arthritis, periodontal osteopenia, adolescent scoliosis, fracture, disuse osteopenia, post-transplant osteopenia, hyper-parathyroidism-associated osteopenia, drug-induced osteopenia, nutritional osteopenia, metabolic bone disease, osteopenia of prematurity and ossification disorder.

13. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, for the manufacture of a medicament for the treatment of patients who have recently undergone treatment with corticosteroids.

14. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, for the manufacture of a medicament for post-treatment of osteopathies wherein an anti-resorptive activity is not desired.

15. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its

hydrates, for the manufacture of a medicament for the treatment of children having an osteopathy.

16. Use according to claim 15 wherein the osteopathy is selected from the group comprising osteoporosis, Paget's disease, arthritis, periodontal osteopenia, adolescent scoliosis, fracture, disuse osteopenia, post-transplant osteopenia, hyper-parathyroidism-associated osteopenia, drug-induced osteopenia, nutritional osteopenia, metabolic bone disease, osteopenia of prematurity and ossification disorder.

17. Use according to any of the foregoing claims wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, or any of its soluble salts or any of its hydrates, will - after the application of the medicament in a patient - be present at extracellular concentrations in a range between  $10^{-6}$ M and  $10^{-10}$ M.

18. Use according to claim 17 wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, or any of its soluble salts or any of its hydrates, will - after the application of the medicament in a patient - be present at extracellular concentrations in a range between  $10^{-7}$ M and  $10^{-9}$ M.

19. Use according to claim 17 wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, or any of its soluble salts or any of its hydrates, will - after the application of the medicament in a patient - be present at an extracellular concentration of about  $10^{-8}$ M.

20. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, for the manufacture of a medicament for the

stimulation of those signaling cascades and reaction mechanisms mediating the action of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, which can be blocked by  $\text{Ca}^{2+}$ -channel blockers.

21. Use according to claim 20 wherein the  $\text{Ca}^{2+}$ -channel blockers are selected from the group comprising nifedipine and verapamil.

22. Use according to any of the foregoing claims wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, is used in doses of 0.01 to 1000 mg/oral application.

23. Use according to claim 22 wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, is used in doses of 12.5 to 75 mg/oral application.

24. Use according to any of the foregoing claims wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, is used in doses of 0.02 to 200 mg/parenteral application.

25. Use according to claim 24 wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, is used in doses of 2.5 to 15 mg/parenteral application.

26. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, for the manufacture of a medicament for the mobilization of  $\text{Ca}^{2+}$ -ions from  $\text{IP}_3$ -sensitive stores.

27. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, according to any of the foregoing claims wherein 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid or any of its soluble salts or any of its hydrates is combined with at least one substance selected from the group comprising calcium salts, calcium citrate, calcium carbonate, other amino-substituted bisphosphonates, pharmaceutically active fluorine-containing salts, vitamins of the D-Group and their metabolites, cholecalciferol, calcifediol, calcitriol, ergocalciferol, PTH, anabolic hormones, estrogens, substances with estrogenic activity on the bone, progestogens, androgens, growth hormones, peptides with growth hormone activity, selective modulators of the estrogenic receptor, raloxifene.

28. Use of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, according to any of the foregoing claims, wherein the medicament is applied before, during or after treatment with other amino-substituted bisphosphonates.

29. A method for screening for  $\text{Ca}^{2+}$ -channel blockers comprising the steps:

- treatment of cells having  $\text{Ca}^{2+}$ -channels with a putative  $\text{Ca}^{2+}$ -channel blocker;
- contacting the cells with 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates;
- measuring a response as a result of the contacting step.

30. A method for screening for functional analogues of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid, any of its soluble salts or any of its hydrates, comprising the steps:

- treatment of cells having  $\text{Ca}^{2+}$ -channels with  $\text{Ca}^{2+}$ -channel blockers;
- contacting the cells with the putative functional analogue which, in the absence of any  $\text{Ca}^{2+}$ -channel blockers, is known to cause a  $\text{Ca}^{2+}$ -ion influx into the cells;
- measuring a response as a result of the contacting step.

31. A method for the selective modulation of osteoblasts and/or for the maintenance of a healthy bone structure and/or for the prevention of osteopathies in healthy patients and/or for the treatment of patients who have recently undergone treatment with corticosteroids, and/or for post-treatment of osteopathies where an anti-resorptive activity is not desired, and/or for the treatment of children having an osteopathy and/or for the stimulation of those signaling cascades and reaction mechanisms mediating the action of 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid or any of its soluble salts or any of its hydrates, which can be blocked by  $\text{Ca}^{2+}$ -channel blockers, and/or for the mobilization of  $\text{Ca}^{2+}$  ions from  $\text{IP}_3$ -sensitive stores, comprising

administering 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid or any of its soluble salts or any of its hydrates alone or in combination with a pharmaceutical carrier to a patient, the 1-amino-3-(N,N-dimethylamino)-propylidene-1,1-bisphosphonic acid or any of its soluble salts or any of

its hydrates being administered in doses of 0.1 to 1000 mg/oral application or 0.02 to 200 mg/parenteral application.